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ABSTRACT

This study examined intellectual development goals as related to other goals expressed by college faculty teaching various introductory courses. Intellectual development was defined as the ability to make relationships and connections. The study analyzed data from previous studies of introductory college courses; these included interviews in 1986-87 with 69 faculty members at eight colleges, plus a base of over 6,000 goals stated by 2,105 faculty at 267 colleges who responded to an open-ended question on a 1988-89 national survey concerning course planning. The study found that intellectual development goals were mentioned by faculty members in most disciplines, with faculty in literature stressing them the most. Six major aspects of intellectual development goals were identified: (1) understanding the connections between disciplines; (2) relating the discipline to the student's life; (3) developing an appreciation for the contribution of the discipline to humanity; (4) broadening the student's intellectual horizons; (5) increasing the student's tolerance of/comfort with ambiguity; and (6) developing the student's intellectual curiosity. Also stressed by most faculty were the links between intellectual development and other goals, such as knowledge acquisition, effective thinking, personal development, and preparation for the future. (Contains 30 references.) (DB)

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Intellectual Development: A Complex Teaching Goal

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This paper was presented at the annual meeting of the Association for the Study of Higher Education held in Albuquerque, New Mexico, November 6-9, 1997. This paper was reviewed by ASHE and was judged to be of high quality and of interest to others concerned with higher education. It has therefore been selected to be included in the ERIC collection of ASHE conference papers.

Purpose of the Study

Faculty members, students and parents, would all agree that intellectual development should be one goal of a college education. Not only might parents and students view this goal differently from faculty, but definitions of intellectual development may vary widely even among faculty teaching different disciplines. In this paper we will examine intellectual development goals as expressed by faculty teaching varied introductory courses. This is the second in a series of papers in which we examine various faculty course goals.

The term intellectual development implies a growth process in which students accrue cognitive abilities during the educational process and, arguably, as a consequence of it. Interpreted in the simplest way, intellectual development could encompass all other types of cognitive growth and, along with personal development, constitute the entirety of a student's education. In our study, we define intellectual development far more specifically as one of five cognitive goals faculty express for their students: general skill development, knowledge acquisition, effective thinking, intellectual development, and future preparation. Following Perry, Baxter-Magolda, and others who have probed the intellectual progress of students, we defined intellectual development goals expressed by faculty as those which intended to foster an increasing awareness of broad connections and encompassing relationships. Students' intellectual development occurs as they apply effective thinking skills to content knowledge and begin to see the broader connections of ideas both within the academic realm and in other aspects of society and life. Intellectual development also involves constructing knowledge by relating new information to existing knowledge structures and creating new associations and relationships. In a sense, intellectual development or "connected learning" is the learning outcome that should parallel curricular "coherence" in which faculty intend to help students see relationships rather than acquire isolated chunks of knowledge (Association of American Colleges, 1991).

In this study we identified intellectual development goals that are addressed by faculty who teach introductory courses in different disciplines. We wanted to understand how faculty members expressed intellectual development goals for their students and what differences occurred among disciplines. By examining the connections between the intellectual development goals and other goals for students, we also wanted to see how faculty constructed their interpretation of intellectual

development.

Literature Review

Two strands of literature informed this study. The first, the body of research on college student intellectual growth, helped us recognize faculty goals for intellectual development and distinguish them from other cognitive skills, such as effective thinking. The second, consisting of studies of discipline differences, guided our attempt to identify ways that faculty expressed these goals differently. We will briefly review each literature.

Student Intellectual Development: Moving toward Understanding Relationships

Many college faculty members are familiar with the work of Benjamin Bloom (1956) who developed a taxonomy to assist in designing measures of students' skill mastery. He distinguished between "intellectual skills," – the modes of operation and techniques for solving problems and "intellectual abilities," – the acts of selecting which information and technique should be used to solve more complex problems. Bloom elaborated on the occasions in which intellectual abilities should come to bear, namely by relating characteristics of new situations to past ones and by independently solving problems. In addition, Bloom briefly linked these intellectual abilities to democracy and citizenship, aspects of a student's personal development. Bloom used the word "synthesis" to describe the process by which the student develops a set of abstract relationships to explain phenomena.

Much literature on college students' intellectual development is based on students' own reports of their thinking processes. These studies help explain how students make meaning of knowledge and begin to see relationships. Based on student interviews, William Perry (1968) conceptualized a series of developmental "positions" which he believed guided students' perceptions, organization and evaluation of knowledge. Over time, Perry found that, students advanced along a nine-position scheme from dualistic thinking, through multiplistic thinking and relativism, to a commitment within relativism. Such a progression involves a changing way of relating oneself to the world of experiences, values, and ideas.

Studies of student intellectual development by King and Kitchener (1994) revealed similar observations about students' self-perceptions of intellectual development. Students' voices were

used to trace their progression from simpler to complex thinking. King and Kitchener's Reflective Judgment Model (1994) describes seven stages of reflective thinking through which college students pass. They emphasize that both different types of thought and different assumptions take place at each stage. Baxter-Magolda's research (1992a, 1992b) discussed four qualitatively different ways of knowing for both genders: absolute, transitional, independent, and contextual, each characterized by a core set of epistemic assumptions. Again, a progression occurred that can be termed intellectual development and which involved the improved understanding of relationships among ideas and between one's self and one's world. This progression in ability to use thinking skills to reflect on ideas and relationships differentiates the process of intellectual development from the prerequisite processes of learning content knowledge and the skills for effective thinking.

In his experiential learning model, David Kolb (1981) studied how various learning styles affect intellectual growth and traced three developmental stages, namely acquisition, specialization, and integration. According to Kolb, development is marked by increasing complexity and relativism in dealing with the world. Kolb views the intellectual development of students as associated with the acquisition of knowledge, extensive personal development, and increasingly complex integrations of experience into their conceptual frameworks.

Another strand of literature involves the discussion of whether possessing critical thinking skills or abilities is useful without the disposition to use those skills. Facione and others (Facione, Sanchez, Facione, and Gainen, 1995) describe a constellation of attitudes or habits of mind which they call the "disposition to think critically." They define critical thinking as a list of core cognitive skills on which American Philosophical Association found consensus in 1990 by using a Delphi technique. The list includes (but perhaps is not limited to) analysis, interpretation, inference, evaluation, explanation, and self-regulation. Facione and Facione (1992) have chosen the complementary perspective in developing the California Critical Thinking Disposition Inventory which includes seven disposition scales: Inquisitiveness, Open-mindedness, Systematicity, Analyticity, Truth-seeking, Critical Thinking Self-Confidence, and Maturity. They claim the scales are discipline-neutral and can be used to empirically assess these intellectual proclivities and track their development. As we compared this work with that of others, it seemed to capture a construct broader than critical thinking which others have called intellectual development or intellectual

growth. But it would be hard to disagree with Facione and his co-authors that general education should be responsible for cultivating both the critical thinking skills and the attitudinal disposition to use them.

Although increasing numbers of faculty members are aware of new knowledge about how intellectual development takes place, many are not. We have found, however, when interviewing faculty about the goals they hold for their students that faculty members often express similar progressions of intellectual growth (Stark, Lowther et al., 1988). Sometimes, but not always, they use words similar to those used by cognitive researchers.

Discipline Differences Among Faculty Goals

When faculty develop goals for students in their courses, the aspects they emphasize vary according to the discipline they teach. Discipline differences in goals, course planning, program curricula, and instructional methods, as well as expected outcomes, have been documented by several researchers.

Dressel and Marcus (1982), elaborating on Phenix's (1964) classification of the disciplines, described characteristics of the individual disciplines as well as dimensions that permeate all disciplines in varying degrees. They included: a symbolic dimension (most typical of language and mathematics); an empiric dimension (most strongly characterizing the natural and social sciences that try to explain, control, and predict events); an aesthetic dimension (the arts and literature that transmit meaning through emotion); and a synoptic dimension (represented by history, philosophy, and religion which attempt to integrate and synthesize knowledge). Dressel and Marcus felt that understanding the structure of several disciplines was an essential part of developing intellectually:

> By learning about the structures of and interrelations among the disciplines, students will come to recognize the connections between their education and the larger patterns within the disciplines and will learn to search for interdisciplinary solutions to complex academic and social issues. (p. 136)

The authors expected, then, that faculty members in the several disciplines would have varying goals related to helping students synthesize knowledge but that student exposure to all the fields would best foster their ability to understand relationships. While investigating quantitatively which

course combinations and sequences seemed most likely to increase students' cognitive abilities. Ratcliff found that faculty from various disciplines believed, as did Dressel and Marcus, that specific fields would likely increase certain types of thinking skills (Jones, 1992, p. 87). For Dressel and Marcus, however, exploring the relations among the fields was essential to intellectual development.

Others have studied disciplinary differences in other facets of teaching and learning. Faculty in different disciplines have been found to exhibit different goals for knowledge acquisition as well as how to teach and grade student progress (Franklin and Theall, 1992). Humanities faculty placed more emphasis on creativity and self-knowledge goals while mathematics and science professors emphasized facts, principles and problem solving. Janet Donald (1990) focused on the nature of concepts, logic structures, truth criteria and methods used by various disciplines. She found logic structures and truth to be more rigid in the sciences while social science and humanities professors were more concerned with abstract concepts. Joan Stark, Malcolm Lowther, and their co-workers investigated the ways in which academic disciplines shape faculty course planning. They found substantial differences in educational beliefs among the disciplines that help direct not only the course goals faculty chose but the extent to which faculty allowed contextual factors to modify them (Stark, Lowther, et al., 1988, 1990). The development of effective thinking skills was an important goal for nearly all disciplines in their study but the broader concept of intellectual development was not explored. Similarly, when asking faculty to select goals they endorse, Thomas Angelo and K. Patricia Cross (1993) found that "acquiring higher order thinking skills" was the most commonly mentioned goal for all disciplines. Like Stark, Lowther, et al., they reported substantial disciplinary differences.

At the program, rather than the course, level Lisa Lattuca and Joan Stark (Lattuca and Stark, 1994, 1995; Stark and Lattuca, 1993) examined disciplinary differences concerning the concept of curricular coherence as expressed in task force reports written for the Association of American Colleges and Universities. They found that the more structured disciplines (sciences and mathematics) endorsed the idea of curricular coherence more often than did unstructured disciplines (humanities and most social sciences) and could define it more fully for their programs. The task force definitions of coherence seemed to focus more frequently on the improvement of thinking skills and on sequencing knowledge learning, rather than on students' overall intellectual

development.

To summarize, disciplinary differences in classroom and program goals among faculty members have been found by many researchers but the variations seem strongest when the goals concern acquisition of specific skills or types of content knowledge. Researchers who have viewed students' intellectual growth as progress in the ability to use these skills and knowledge to relate or synthesize ideas, have not mentioned significant discipline differences. The reason may be that their work has been based mainly on students' overall college experiences rather than on specific courses where faculty intentions in promoting students' intellectual development could be noted. Our study, based upon faculty perceptions of intellectual development and its importance when they choose course goals, helps understand the link between faculty intentions and student experiences. Thus, in analyzing faculty goal statements, we tried to determine whether faculty considered the ability to make relationships and connections (our definition of intellectual development) to be an important aspect of their efforts to help students progress to higher levels of knowing. We also explored potential discipline differences which, we speculated, may be less pronounced when the faculty goals focus broadly on intellectual progress.

Data Sources and Methods

Data Set

Data used to examine faculty goals in this study came from the Stark and Lowther data which were collected during studies of introductory college courses in the mid and late 1980s. The first data set (I) was based on 1986-87 interviews with 69 faculty members teaching introductory courses at eight colleges. The second data set (II) was a base of over 6000 goals stated by 2105 faculty in response to an open-ended question on a 1988-89 nationally representative survey on course planning. This group of faculty taught a slightly broader range of introductory courses at 267 colleges. For the purposes of this analysis we examined the goals of faculty teaching English composition (Data Sets I and II), literature (I, II), sociology (I, II), history (I, II), psychology (II), biology (I, II), mathematics (I, II), fine arts (II), and romance languages (II) (see Table 1). We chose these courses from a larger range of introductory courses surveyed by Stark and her colleagues in order to focus on common general education courses.

Table 1: Faculty Distribution in Data Sets I and II

These data sets had been previously examined to abstract varied factors influencing course planning (Stark et al., 1988). Data transcripts were re-analyzed in 1995-97 by three researchers not involved in the original study. For the purposes of this analysis we asked the following questions:

* How are faculty goals for students expressed in various disciplines?
* Which goals are most often mentioned in specific disciplines?
*Do faculty in different disciplines use different vocabulary to describe goals that are actually very much alike?
* Conversely, do faculty in different disciplines use the same vocabulary to describe goals that actually are very different?

In our analysis of faculty goals we classified statements into seven major categories: Knowledge Acquisition, Intellectual Development, Effective Thinking, General Skill Development, Personal Development, Future Preparation, and Instructional Process Goals. Previously we analyzed goals of Effective Thinking and reported substantial differences in faculty language used to express them (Eljamal et al., 1996). Here we concentrate on Intellectual Development goals. In subsequent papers we will be concerned with analyzing the goals faculty submitted that we classified in the Personal Development and Knowledge Acquisition goal categories.

Abstracting Goal Statements

For Data Set I we abstracted goal statements (451) volunteered by interviewed faculty from any part of the 90-minute interview sessions as well as those given in answer to the question: "What are the primary goals you have for students in your course?" We considered all goals mentioned because, in unstructured interviews, faculty often made goal statements before the question about goals had been posed formally.

For Data Set II, survey goal statements were taken only from responses to the open-ended question: "Please state briefly two goals for your introductory course that you believe are important to communicate to students." Since responses in the 1990 study often included more than two goals, a limit of four goal statements per response was imposed. If more than four goals were present, goals were included in order of their mention in a statement. For example, if a faculty member wrote "the development of reading, writing, and critical thinking skills" as a single goal statement, and then "cultural tolerance and awareness of differing opinions" as the second goal statement, the first two goals of "development of reading skills", and "development of writing skills" from the first statement and the first two goals "cultural tolerance" and "awareness of differing opinions" from the second goal statement were selected for analysis.

Analysis

We used information from relevant literature to construct a preliminary set of major goal categories and an anticipated set of goal subcategories within each. We then modified the categories and subcategories as we examined the data sets against this preliminary taxonomy. We developed specific goal definitions for each major goal as well as for the subgoals within each major category (See Table 2 for an outline and definitions of the major goal categories).We coded Data Set I (interviews) knowing the interviewee's disciplinary background. We coded Data Set II (survey responses) without knowledge of the respondent's discipline.

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subcategory any statements that were not classifiable or statements contributed by faculty whose discipline or teaching department was unclear. We then analyzed the goal statements by subcategory of Intellectual Development (see Table 3) to interpret themes that emerged from them. At the same time we looked for disciplinary differences and similarities among faculty expressions of these goals.

Table 3: Intellectual Development Goals (defined)

Finally, our analysis involved revisiting all Intellectual Development goal statements to determine whether particular goals were mentioned in context or linked with goals in the other major goal categories listed in Table 2. We sought to determine if specific disciplines strongly espoused particular combinations of goals.

Results and Interpretation

Emphases In Varied Disciplines

Intellectual Development goals were mentioned by faculty members in most disciplines but faculty members in literature stressed them the most, providing close to one-fourth of all 416 goal statements we classified. With the exception of foreign language and mathematics faculty, who mentioned few, instructors from all other fields were about equally likely to mention Intellectual Development goals.

As we defined them, Intellectual Development goals involved helping the students to recognize and understand broad relationships. In the analysis, however, a variety of relationships became obvious to us. Science and social science instructors emphasized the importance of relating the discipline to students' lives. Literature and fine arts instructors primarily discussed fostering appreciation of the discipline's contributions to humanity. Composition teachers most often mentioned developing intellectual curiosity and encouraging independent thinking. History instructors emphasized (almost equally) three themes: appreciation of the discipline's contribution to humanity, the development of intellectual curiosity, and the pursuit of knowledge. Although foreign language instructors contributed few Intellectual Development goal statements, those who

did so mentioned the importance of exposing students to new and diverse ideas. Similarly, mathematics faculty members seldom emphasized this goal but when they did they most often mentioned discovering the links between mathematics and various other disciplines. We will discuss each of these ways of relating briefly.

1) Intellectual Development: Relationships Between Fields

Connecting the Disciplines. Many Intellectual Development goals were concerned with helping students recognize the connections between the discipline of the introductory course the instructor was teaching and other disciplines. The statements about relationships among fields were typically general and not always developed beyond the general idea that linkages exist and students should recognize them. Words such as "application," "interdisciplinary," and "integration" were used to stress the links between fields. One key theme was that to better understand a field, students need to grasp both the ways other fields influence it and the ways it influences other fields. These interdependent relationships exist among fields that have similar traditions, (within the arts, or within the social sciences, for example) as well as between fields that are generally considered dissimilar in tradition or focus (the arts with the sciences). A special case of this relationship was the connection faculty made between other fields and history in order to understand the historical development of the discipline and how it has been influenced by the times. Science faculty, especially, mentioned relationships with other fields in reciprocal ways: to present a contrast to scientific thinking, for example, with that in humanities and to see how other fields, for example history, affect scientific inquiry. As an exception, foreign language and composition instructors did not mention reciprocal relationships with other disciplines among their goals. Perhaps, at the introductory level, these fields provide skills which may be related to other disciplines in a supportive relationship rather than a reciprocal relationship.

Understanding human history. A second theme that emerged was that learning about relationships among disciplines helps students to understand the course of human history, including cultural development, politics, social problems, and human conflict. This theme was often heard from faculty in the humanities who saw their role as synthesizers of knowledge and human experience: "To teach the history of western civilization and within this frame to encourage appreciation of art, philosophy, literature, and social problems" (History). Frequently, humanities faculty mentioned the use of historical time periods as organizing frames for helping students to

understand these relationships. Other relationships were occasionally mentioned such as understanding the human body through the joint contributions of biology and psychology.

Planning one's education. A third theme we heard was that students should understand relationships among the disciplines in order to understand and plan their educational experiences, especially recognizing the place of the disciplines in their general education and in the rationale for their total educational program. Some faculty members, especially those in composition, emphasized this use of interrelationships for counseling purposes and wanted students to see their education as having no "sharp boundaries" within the disciplines. Some examples of statements reflecting this theme are:

> The role of the subject matter in the integration of the student's knowledge. (History)
>
> ...to place [the disciplines] within the context of the overall educational scheme. (Composition)
>
> I'm trying to point out to them where biology fits in at (this) college.. there are important connections between philosophy and science, and.. between history and biology... sociology and biology.. (Biology)

Disciplines in each others' service. Relationships are important also in order to understand and apply the concepts or skills from one discipline in the service of another, as when mathematics, biology, or psychology is applied to studies in problem-solving in business, the sciences, or the social sciences. A special case of this fourth type of relationship was the use of one discipline as a foundation on which other disciplines build. The view that the particular discipline provides a foundation was most often mentioned by faculty teaching biology, mathematics, and psychology.

> Mathematical skills are relevant in many academic disciplines and in a wide variety of daily activities. (Mathematics)
>
> Psychology is an underpinning to all fields in which people interact in the normal course of affairs. (Psychology)
>
> To illustrate how the study of behavior (psychology) can be useful in other academic courses as well as life. (Psychology)

2) Intellectual Development: Relating the discipline to students' lives.

Another type of relationship includes examining how the academic field plays a role in students' personal lives. In general, faculty members used similar words when discussing such goals. Students were expected to "become aware of the relationships between the discipline and their lives," or to "become active in relating" the discipline to their lives. Biology and psychology instructors, particularly, emphasized the more active role of the student, hoping that students would "use," "utilize," or "apply" the knowledge learned in the course to their own lives. Biology instructors specifically mentioned wanting students to become informed consumers who would be capable of deciphering and making sense of scientific and popular journals addressing biological problems.

> ...what I tell my students, "I hope with this kind of basic knowledge about living things, you'll be able to get more out of reading the newspaper. And every day there are more and more articles, scientific articles and rather than simply turn the page with this sort of background you ought to be able to understand it."

Biology instructors also strongly emphasized the importance of realizing that their discipline is pervasive in students' lives. Students need not search to find ways in which biology relates to their routine activities.

Composition faculty members' goal statements focusing on the relation of the discipline to students' lives were worded differently from those contributed by natural and social science faculty. For composition instructors, understanding human relationships through literature was important. Students should develop the "ability to analyze, interpret, critique literature and apply this to contemporary life experiences and relationships." One faculty member outlined those aspects of a student's life that could be touched by the discipline this way: "My subject is useful in all areas of their lives, from practical career concerns to fulfilling human relationships." In addition, composition faculty members stressed understanding the universality of certain human experiences. The emotions and situations encountered by characters in literature are the same as those felt by students or anyone else in the world: "To be able to apply situations as they appear in literature which are common to us all, to themselves and their common situation," and "I think it is important for students to see that literature is a way to encounter people and situations like themselves and their problems."

Literature faculty members, too, mentioned the commonality of human experience.

although not quite as often as composition faculty. One literature professor wanted "to pay particular attention to works by authors whose religious experience may be similar to their own—for instance, Newman and Hopkins." Another discussed his efforts to relate Shakespeare to the students' lives:

> I try to make them see that they are not simply worshipers of Shakespeare. That's not what they're trying to be. But that they share some of the same thoughts and the same language, some of the same skills, some of the same passions. (Literature)

Most frequently, however, literature faculty simple referred more generally to relating literary texts to the students' lives. Possibly, this goal is so familiar they neglect to describe it in detail.

Sociology instructors' goal statements about connecting the discipline to students' personal lives directly reflected the sociological method of inquiry. The statements mentioned the importance of students' abilities to view their lives as the object of social forces and to understand "our own personal biography within the larger social/historical context." Sociology instructors often emphasized learning how society "affects" students' lives, implying causal relationships.

Occasionally, we also heard biology professors assume causal relationships. For example, "each student should understand biological processes that have shaped him/her and how they operate in the contemporary world" and the student should gain "knowledge of concepts/bodies of information that impact upon society and students' lives."

Psychology instructors, like their colleagues teaching sociology and composition, stressed goals of applying knowledge learned in the classroom to personal relationships:

> That their knowledge of psychology can be utilized to make their lives and the lives of others more fulfilling. (Psychology)
>
> Application of knowledge and skills to personal relationships. (Psychology)

<u>3) Intellectual Development: Develop an appreciation for the contribution of the discipline to humanity.</u>

This type of Intellectual Development goal is focused on developing the student's appreciation of the discipline's contributions to humanity in general. Such an appreciation is broader than the student's recognition of the discipline's links with his/her personal life. The appreciation of a discipline's contribution to humanity is evidenced when a student can articulate

the theoretical and abstract contributions of the discipline.

The humanities faculty (fine arts, history, and literature) all strongly emphasized the contributions of their disciplines to humanity, but very few of mathematics, biology and social science faculty did so. These results seem consistent with the Dressel and Marcus classification of history and literature as "synoptic" disciplines.

Society influences how knowledge in the discipline is advanced. Some fine arts faculty members discussed these reciprocal spheres of influence: "Influence of art upon human beings and the influence that people have on the arts." This influence was not only mentioned by fine arts faculty but by those in other disciplines as well.

> A comprehension of the influence of society on science and vice versa. (Biology)
>
> To enable students to examine the literature as it effects [sp] societal values and norms. (Literature)
>
> That it contains a survey of the development of ideas - political, economic, social, and intellectual and the ways in which these ideas affect society. (History)

The word "reflect" and similar imagery ("window," "mirror") were found often in goal statements pertaining to fostering an appreciation of the discipline's contribution to humanity. This terminology, used frequently by composition and fine arts faculty, as well as a few literature faculty, suggests the ability of the discipline to show and explain humanity's strengths and weaknesses.

> To develop an appreciation of literature as a reflection of the culture it represents and of the diversity of human experiences within that culture. (Composition)
>
> To appreciate art history from the perspective that works of art are a kind of mirror that reflect the cultural concerns of a particular civilization at a particular point in time. (Fine Arts)
>
> Literature mirrors us back to ourselves so that we can understand human complexity, and learn to differentiate compassionate and wise responses. (Literature)

Despite this common phrasing, what faculty feel is reflected may vary by discipline. Literature faculty focused on how their field helps students see the universality of emotions and experiences:

> To show how they provide us with a window to our own world and how

more alike the people of the world are than different in spite of all the propaganda to the contrary. (Literature)

To find the deeper significance and universality of fictional works. (Literature)

That the students learn that who they are and what they are thinking and feeling is part of a continuum - that underneath differences in language, culture, and periods in time, humanity shares certain universals. (Literature)

Composition instructors remained more abstract, discussing the reflection of life and culture in general. Fine arts faculty members were more specific in describing aspects of culture or specific time periods that are reflected:

Theatre is a product of its time. (Fine Arts)

To explore the relationship between art and politics in the 19th-20th centuries, how that relationship has changed over time and ways in which artists have addressed social and political concerns through the visual arts.(Fine Arts)

To understand how monuments of art and music communicate a society's values. (Fine Arts)

The term "reflect" when used by most humanities instructors to describe the discipline's contribution sounded passive. Fine arts faculty members, however, frequently used the more active word "communicate" when describing the contribution of fine arts to humanity. They viewed art as a language that reflects society in a way that might be understandable to all.

Music is a way of thinking and communicating and reflects the prevailing zeitgeist of the era in which it was created. (Fine Arts)

The role played by the arts in communicating social values and systems (art reflecting culture). (Fine Arts)

The importance of visual communication (art) to life and its influence on civilizations' intellectual progression. (Fine Arts)

Fine arts and literature faculty also discussed the importance of understanding that their disciplines not only reflect life and communicate values, but also play an active role in influencing society.

Students should appreciate the degrees to which language affects them and the world in which they live. (Composition)

The role of language in contemporary America. (Composition)

> To gain increased appreciation of the great ideas, art literature, and events that have influenced the history of western civilization. (Fine Arts)
>
> An understanding of the arts in history, and how mankind's life story has been influenced by the arts in general. (Fine Arts)

4) Intellectual Development: Broaden Horizons.

We classified goals in the subcategory called Broaden Horizons when they either included exposure to and understanding of new and diverse ideas or incorporated the students' tolerance of new ways of thinking. Less than 20% of all faculty goal statements dealing with Intellectual Development expressed the aim of exposing students to new and different ideas, broadening their horizons or opening them to new ways of thinking. Fine arts, literature, and sociology faculty members were the most likely, and mathematics and biology instructors the least likely, to mention this goal. According to the faculty, exposure to new ideas and new ways of thinking could serve several functions—among them challenging and changing students' views of the world and breaking down existing prejudices.

Fine arts faculty members were the most likely of all disciplines to mention exposure to new and different ideas as a goal. They spoke of broadening students' horizons about art and their artistic preferences. Breaking down prejudices toward styles of art and music was important. For instance, "by listening to a varied amount of music, students might rid themselves of prejudice toward music they have never heard before." And, as one fine arts faculty member noted, "this exposure gives them a little knowledge and understanding, and with knowledge and understanding comes the ability to appreciate and enjoy."

Both literature and sociology faculty spoke of their efforts to expose students to diverse ideas and approaches to ideas. Literature "introduces students to diversity of thought" and "the world of varying perspectives on specific issues." Moreover, "literature can be approached from a number of interpretive directions and using a number of interpretive techniques." Faculty from sociology spoke of how their discipline enhanced students' openness and receptivity to new information and concepts. Faculty want students to "understand that there are many ways of looking at the world" and that there are "alternative frameworks for understanding social problems." According to one literature faculty member, understanding the multiplicity of ideas and

approaches is important because, "it enhances tolerance for the views of others" and "one must understand what another thinks or believes before one can agree or disagree with the other." The notion of exposure leading to more active learning on the student's part was voiced by a sociology professor who spoke of his aim of advancing students' intellectual development from a passive stance to a more active role by challenging "the students' received knowledge."

Composition and foreign language faculty aimed at getting students to see beyond their own experience as well as to perceive and accept multiple points of view. One composition faculty member was very clear that his/her goal was "an acceptance of multiplicity of viewpoints." The writing students do "becomes a vehicle for exploring knowledge." For foreign language faculty members the learning of other languages is a way of seeing that others' ways of thinking and speaking exist. Their goal is to demonstrate that language is useful for broadening one's horizons and "learning a language is a way to expand one's mind."

Faculty members teaching history wanted students to "get a sense of the sweep of the subject" and "think in ways that they're not in the habit of thinking." A majority of the history faculty saw their course as a vehicle for providing the student with "a bigger picture" and "a broader perspective."

And although mathematics, biology, and psychology faculty members were among those least likely to mention broadening horizons as a goal, several interesting observations were made by faculty teaching these disciplines. One mathematics professor noted:

> I really feel that if students don't come out of a calculus course with their perception of the world substantially changed, the course has been a failure for them. So it is a new way of thinking for people who have not seen it before and it can radically change their view of the world. (Mathematics)

Faculty members teaching biology mentioned this goal in instrumental terms in believing that their courses would lead to "broader thinking as to career opportunities."

4) Intellectual Development: Tolerance of/ comfort with ambiguity of ideas

Faculty goals we placed in this Intellectual Development subcategory center on helping students gain comfort with ideas and issues for which there are no clear cut answers. Whereas our subcategory Broaden Horizons dealt with the student's mere *exposure* to multiplistic ideas, this subcategory roughly parallels Perry's position where students receive all knowledge and values as

contextual and relativistic. It was noteworthy how infrequently faculty mentioned goals relating to tolerance with ambiguous ideas. The challenge of ambiguity may be quite rare in introductory courses.

Literature faculty were most likely to mention the desirability of students gaining comfort with ambiguous ideas and issues. They spoke of both content and mode of interpretation: "There is no absolute reading of a literary text." "And there is no one method of interpretation.. it's all subjective and the student's response is valid." Wrestling with the ambiguity is important for facilitating understanding.

Composition faculty seemed to note the challenge students encounter when faced with ambiguity. One faculty member observed, "...at least they've been roughed up a bit." "Writing should be a means of learning and even a means of changing one's mind."

History instructors wanted to let students know "that there are many, many different ways and that almost all of these ways have some utility." Additionally, one history faculty member believed "it is important for students to come to grips with unstructured things." Another connected intellectual development with critical/analytical thinking when he/she stated the desire that students develop "the ability to analyze, criticize and cope with ambiguous concepts and problems."

Only a few biology instructors mentioned tolerance for ambiguity but they captured the notion of ambiguity of ideas in their own unique way by emphasizing "the mystery of the universe" and that "there are no absolute truths in science." A sociology instructor spoke to ambiguity when he/she said students should see "that the social world is not necessarily what it appears to be." Another noted that "there is usually more to a social problem than meets the eye."

Mathematics and psychology faculty mentioned striving to help students see the inherently ambiguous nature of their disciplines. Mathematics faculty narrowed the notion of ambiguity to the fact that there are many possible correct solutions to a problem. Psychology faculty pursued a similar route by noting that "there are many different ways to explain the same behavior or phenomenon."

5) Intellectual Development: Intellectual Curiosity

The development of intellectual curiosity requires that students be self-motivated in their learning, develop and pursue new questions, and work toward answers independently. Faculty

members mentioned this goal less frequently than many others, but, with the exception of foreign language instructors, faculty in all disciplines expressed some concern for promoting intellectual curiosity in their students. Sociology and psychology teachers were most likely to include intellectual curiosity goals, followed by history and English teachers (both literature and composition),and then the natural sciences and mathematics. A single goal statement concerning intellectual curiosity was elicited from a fine arts teacher; none from foreign language teachers. We identified three variations among faculty goal statements in this subcategory: 1) explicit references to curiosity, 2) references to independent or self-reliant thinking, and 3) references to asking questions.

Statements about curiosity typically included a form of the word "curious" although they sometimes incorporated words such as "trying out," "exploring," or "experimenting with new ideas." Independent thinking goals, often expressed as "self-reliance" or "thinking for themselves," were typically associated with making effective evaluations or judgments. Statements about questioning also included the term inquiry. Some of the goal statements incorporated more than one of the three variations of intellectual curiosity mentioned above. One history instructor, for example, hoped that students would develop "the ability to think beyond the classroom, to question and explore intellectual realms which lie beyond textbook material."

We noted an apparent difference in terminology between sociology and psychology instructors. Sociology teachers were less likely to expressly encourage curiosity and more likely to urge questioning, independent thinking, and investigation on their own. In contrast, goal statements from psychology teachers were evenly divided between stimulating curiosity, independent thinking and "asking promising questions."

Like sociology instructors, history instructors focused on encouraging questioning and independent thinking. From the one-word goal, "inquiry" to more elaborate explanations, history teachers hoped to instill a "curious, questioning approach" and "to teach students to ask the right questions." Working or thinking independently was associated with making sound evaluations of events, course materials, and in one case, even the teacher's comments. A typical statement by a history instructor discussed the teacher's hopes that students would learn to "work independently to arrive at meaningful and accurate judgments." Among history teachers these goals were not explicitly related to concepts of the discipline, suggesting that they were seen as valuable in the

classroom context as well as apart from it.

English composition teachers were more likely than literature teachers to include intellectual curiosity goals that were expressed as independent thinking, an activity they associated with effective writing. One teacher explained that "by gaining proficiency at writing, they become self-reliant thinkers," and another that "by becoming self-reliant thinkers, they express their thoughts to effect change in their lives." Composition teachers also wanted students to learn to "draw on personal experience and interests" for ideas for their writing. Also concerned with independent thought, literature teachers wanted their students to "develop the ability to think and judge independently and well."

Stimulating intellectual curiosity was not a dominant goal expressed by mathematics and biology teachers, but those who mentioned it were explicit. "Self-reliance—the importance of struggling with a concept without help for greater learning" and "logic, curiosity, imagination and an appreciation for this branch of math" were the goals offered by mathematics teachers. A biology teacher hoped to develop "wonder and interest in living things."

Links with other Classroom Goals

Although we are attempting in our study to tease out the specific goals faculty hold for their students, we realize that the goals faculty hold for a course are not independent of each other. Many of the goal statements which we classified as Intellectual Development were mentioned in conjunction with other major goals, such as Knowledge Acquisition and Personal Development. We mention a few of these connections here.

Links to Knowledge Acquisition.

Instructors hope students will master content such as theories, principles, concepts, terminology, application, and the field's mode of inquiry. Knowledge acquisition of this sort is not separable from other goals faculty hold for students. As was the case with Effective Thinking goals (Eljamal et al., 1996), many statements about Intellectual Development were embedded in content, linking the student's life to the discipline via the field's principles and concepts.

> Teach basic biological concepts and demonstrate how they are related to students' activities. (Biology)

> Application of course concepts to personal life, especially issues of personal adjustment and actualization. (Psychology)
>
> We're trying to get the students to see that...those concepts are not something that you just memorize for a 3-credit course and then you off and forget it. But rather these things have reality in helping your cope with the situations in which you exist as you are out in the real world. (Sociology)

For biology and social sciences, then, it appears that most instructors often believe intellectual development is embedded in students' understanding of the disciplinary foundations. One psychology teacher linked Knowledge Acquisition with Intellectual Curiosity, intending to "give students exposure to major theories and research, stimulating curiosity about asking promising questions, rather than nailing down answers."

Composition faculty linked the appreciation of the discipline with learning various genres of literature:

> The student should be able to demonstrate an understanding of the essay, short story and novel and recognize the possible implications and association of the genre to human life experiences that are applicable to society today. (Composition)

Fine arts instructors emphasized various art forms in connection with general appreciation of the contributions of the discipline: "Theatre takes many forms in several mediums (live and/or recorded) and, being an inherent part of the individual and his culture, should be studied toward gaining a critic's knowledge." Thus, faculty believe, the better the student's basic knowledge of various types of writing and art forms, the better s/he will be able to achieve intellectual development evidenced by appreciating that art form and its contribution to humanity. Knowledge Acquisition and Intellectual Development are also linked through understanding and appreciating the arts as a mode of inquiry. By exploring the general contributions of the discipline to humanity and excelling in recognizing its diverse forms, the student might become a knowledgeable critic of the arts.

Links with Effective Thinking

The major goal category we called Effective Thinking was concerned with critical and analytical thinking skills, creative thinking, synthetic thinking, deductive reasoning, and problem

solving (Eljamal et al., 1996). Although we judged independent thinking to be one facet of intellectual curiosity and thus part of intellectual development, the line is not clearly drawn between independent thinking and the various subcategories of Effective Thinking. Indeed, as we have pointed out in the introduction to this paper, both effective thinking skills and content knowledge are essential to intellectual development. Occasionally, too, a faculty member connected independent thinking explicitly with critical thinking. For example, a history teacher's goal was that students learn "not to accept the world at face value but to investigate the nature and values at work in events and in their lives." A composition teacher was more explicit, "Critical thinking is the ability to analyze, weigh, and evaluate data or experiences: independent inquiry." A literature teacher's goal statement illustrates this connection: "That this course (Introduction to Literature) is designed to foster the development of thinking skills that could promote intellectual autonomy (self-reliance) which is useful in dealing with any texts—literary or otherwise."

Links with Personal Development

Personal Development goals encompassed several ideas ranging from increasing student motivation and self-confidence to helping students clarify values and develop leadership skills. Since one subcategory of Intellectual Development goals focuses on the relationship of learning to the student's personal life, the connection between Intellectual Development and Personal Development obviously is strong. Faculty who made this link most frequently in their goal statements tended to teach humanities or psychology courses. They regarded Intellectual Development as a stepping stone to Personal Development. For example, composition faculty discussed applying knowledge to a student's relationships. Using the knowledge learned in class, one can grow personally, by creating "fulfilling human relationships." Literature instructors discussed how "the course has a direct bearing on the way they (the students) live their lives."

Some fine arts and literature faculty members linked Intellectual Development to defining one's personal cultural values: "Students should understand the backgrounds of their culture in terms of art, philosophy, literature and belief systems." And, "students should experience with course skills and content to their own life and values." They should be able "to discover relationships between literature and one's values and beliefs, and to clarify those values and beliefs." A history teacher expressed similar goals, for students to understand "what is meant by

humanism and its relevance to one's educational development and personal growth."

Both literature and fine arts faculty members mentioned developing the tolerance of others in connection with appreciation of their respective disciplines.

> Literature mirrors us back to ourselves so that we can understand human complexity, and learn to differentiate compassionate and wise responses. (Literature)

> To demonstrate that the visual arts are relevant to the human experience and can therefore heighten one's global perspective and tolerance of others. (Fine Arts)

These statements do not trace the specific way appreciation of the arts will help students learn tolerance for others. These instructors may feel that tolerance will occur through the students' exploration of human complexity displayed in literature and the arts. A closely related idea is students' development of self-awareness, another facet of Personal Development. In order to understand others, one must first understand one's own views. One literature instructor said "Literature is essentially the study of the human condition. There is much that can be applied to each individual's understanding of himself." The goal statements of several composition teachers suggested a connection between self-awareness, self-expression and intellectual curiosity.

> Help them articulate appropriate problems or questions for themselves.

> That each student should turn to themselves for essay ideas, drawing on personal experience and interests in developing idea and essays.

> They must discover ideas and create interest, everywhere, always; but especially in school, to make learning their own.

Composition instructors mentioned more goals in the Personal Development category than others since these instructors tended to take a counseling view, seeing their subject as a vehicle for personal development. Thus, especially for composition faculty, but also for others, the distinction between Intellectual Development and Personal Development as teaching goals may be blurred.

Links with Future Preparation

Goals in the category we called Future Preparation addressed the application of knowledge and skills to other academic and nonacademic domains in a student's lifetime. Some of the

subcategories of this major goal category included preparation for the next course, for college, for a career, and for citizenship. We found connections between Intellectual Development goals and Future Preparation goals only when noting the importance of relationships between academic fields. These occurred when the faculty viewed their field as foundation preparation for another field, such as when mathematics lays a foundation of skills for study of physics, or for a future work field such as business. They sometimes also occurred when faculty expressed a more reciprocal view of the relationship between fields, each helping to understand the other and thus, both contributing to future preparation.

Study Limitations

Our analysis has illuminated the nature of some disciplinary differences and similarities in faculty goals for introductory courses. The analysis is limited to goals faculty expressed for introductory courses, and as representative of that group, it included many instructors teaching composition, literature, and mathematics. Had we oversampled introductory courses in other disciplines, we could have drawn firmer conclusions about other fields and detected nuances more clearly for fields such as history. A different sample, including courses in undergraduate professional courses would also augment this study, perhaps revealing new language used to express goals.

The 90-minute interview format (Data Set I) was most helpful in allowing faculty to freely express their goals and created a contextual frame for goal statements. Unfortunately, this was the smaller data set and did not include interviews with romance language, psychology, or fine arts faculty members. In contrast, the survey format (Data Set II) allowed only a few lines for faculty to state primary goals and we selected the first few ideas mentioned. This left little room for interpretations of the thoughts behind brief phrases such as "broaden horizons" or "develop curiosity." Together, the two data sets painted an interesting, but still incomplete, picture of faculty thoughts.

Conclusions and Discussion

We defined Intellectual Development goals as the intent to help students understand various

relationships and connections between the discipline and other entities, including other fields and various aspects of life. Faculty in varied disciplines all appear to include students' intellectual development as a teaching goal, but the low frequency of mentions indicates that intellectual development may be a low priority for instructors teaching introductory courses. One possible explanation is that the goal of Intellectual Development is one that is pursued over time and may be more fully articulated by faculty for more advanced courses. Another possibility is that the period in which the data were gathered may have influenced the faculty voices we heard. For example, due to the extensive discussions about "critical thinking" during the mid 1980s, "critical thinking" may have been the popular term to use, even when one really meant the broader process of intellectual development. Although our review of related literature led us to conclude that Intellectual Development goals would be more inclusive than prerequisite Effective Thinking goals, there is no reason to believe that our respondents would have incorporated the same goal hierarchy into their everyday language.

The limited number of goal statements and their general nature in all fields may reflect the emphasis on knowledge acquisition in the specific discipline's introductory courses rather than on the relationships and connections with other fields. One of the relationships that the faculty members least commonly mentioned striving for was relationships among the disciplines, either as a foundation for others or in a reciprocal connection. Perhaps faculty teaching introductory courses feel that cross-disciplinary connections are best made only after the students are better versed in the subject. If so, the problem of creating cohesive curricula and "connected learning" remains obstinate at the general education level. Until faculty impress upon their students the ways in which their coursework in one class relates to the next, students may not view their education as a unified whole.

In contrast to interdisciplinary connections, the relationships between the discipline and students' lives, and the relationship between the discipline and humanity were mentioned most frequently. Achieving these connections probably requires the least amount of abstract thinking and is more attainable in introductory courses. Placing oneself in relation to the discipline is a reasonable undertaking for students at an early stage, and understanding the contributions of the discipline to humanity might be seen as an extension of the connection to self.

Broadening horizons may be a more feasible Intellectual Development goal for those fields

that not all students have studied prior to college, such as sociology and fine arts appreciation. This is the students' first chance to explore a new discipline outside of their high school experience and instructors in those courses seem aware that they can endorse this goal readily. In contrast, the goal we labeled intellectual curiosity also requires motivation, an aspect of the student's personal development that instructors may believe is missing in many basic required courses.

Some disciplinary differences occurred in the extent of emphasis placed on Intellectual Development goals; different fields emphasized various subgoals in these categories to distinctly different degrees. Biology and social science faculty members seemed most interested in creating links between the discipline and students' lives, while fine arts, history, and literature instructors were most interested in developing the students' appreciation for the discipline's contributions to humanity. Mathematics faculty mentioned helping students understand the connections to other disciplines as their primary goal, while composition instructors emphasized developing intellectual curiosity and foreign language instructors chose to broaden students' horizons.

Faculty members often used similar words to describe their goals, but the context reflected their disciplinary backgrounds. For example, the methods used in sociology directly affected the ways sociology instructors described their goals for students to connect the discipline with their own lives. Similarly, the cultural content of fine arts courses influenced the statements fine arts instructors made about the contributions of their discipline to humanity generally.

For faculty, intellectual development is closely related to knowledge acquisition and the character of the discipline as outlined by Dressel and Marcus (1982). Faculty in the "symbolic" disciplines (composition, mathematics, language) saw language as a way of exploring relationships. The"synoptic" disciplines (history and other humanities) linked intellectual development with the student's ability to connect the discipline with the real world, culture, and life. Instructors in the "empiric" fields (biology, psychology, sociology) saw their knowledge bases and their modes of inquiry as providing the knowledge foundations on which other fields, or students in their lives, could build. And finally, those teaching the "aesthetic" fields saw culture and values appreciation as the relationship they could best foster between the discipline and the students' lives. Thus, each set of goals clearly reflects the unique character of the discipline.

Much of the literature on student intellectual development indicates that beginning college students are limited in their ability to understand relationships and have a long developmental path

ahead. Several transitions face them as they move from the more absolute ways of knowing to the more relative and then more committed ways. Perry's work indicates that this development may proceed at different rates for different students, in spurts, with backsliding. The introductory courses can only begin to foster this development. Our analysis shows that introductory teachers are not likely to choose the goal of making students comfortable with ambiguity, a necessary step, the theorists indicate, to further development. Introductory teachers in all fields could be doing a bit more to get the process started.

Intellectual development is a very central goal of education, enhanced by and related to, other goals. Perhaps faculty teaching introductory courses emphasize more of the other goals that are, in the end, instrumental to intellectual development. Both Perry (1968) and Bloom (1956) for example, tie ethical and personal development to intellectual development, but these ties were not very strong in the way faculty expressed goals for their students. Greater emphasis on the personal development of students may help them to integrate knowledge and thinking strategies as is needed for intellectual development.

Recent criticism of lack of coherence in the college curriculum and lack of connectedness among facets of college learning may be justified insofar as teachers of distinct introductory courses continue to emphasize their own fields and the specific relationships these fields have with students' lives. Yet, in these separate introductory courses, the foundations of knowledge acquisition and basic effective thinking skills (Eljamal, et al., 1996) are emphasized and make a contribution to the beginning of the intellectual growth process. Because our study was conducted at the course level we cannot assess the total emphasis faculty place on intellectual development in later periods in the students' education. The task of later courses and of a carefully coordinated educational program throughout the college years may be to build on these fundamentals to develop relationships more fully.

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Table 1:
Faculty Distribution by Discipline
in Databases I and II

Discipline	Database I	Database II
Biology	13	215
Composition	14	415
Fine Arts Appreciation	-	205
Foreign Language	-	172
History	8	263
Literature	12	210
Mathematics	12	304
Psychology	-	180
Sociology	10	141
Total	**69**	**2105**

Table 2:

Major Goal Categories (Defined)

Major Goal Category	Definition
Knowledge Acquisition	Gaining content knowledge of the field
Intellectual Development	Seeing broad relationships and connections
Effective Thinking	Thinking and reasoning in multiple ways
General Skill Development	Using basic skills such as reading, writing, speaking, calculating
Personal Development	Improving personal characteristics or quality of life
Future Preparation	Preparing oneself for future academic work, career, life
Instructional Process Goals	Describing faculty ideas on teaching methods

*Note: We also included a residuals category

Table 3:
Intellectual Development Goal Subcategories (Defined)

Intellectual Development Goal	Definition
Relationships between fields	To learn the relationships between disciplines and how these relationships are connected in the educational program.
Relationships between the discipline and students' lives	To learn the relationships between the discipline and the student's personal life.
Appreciation for Discipline's Contribution to Humanity	To understand the theoretical and abstract contributions of the discipline to humanity in general.
Broaden Horizons	To be exposed and understand new and diverse ideas; and tolerate new ways of thinking.
Tolerance of ambiguous ideas	To accept and be comfortable with ideas and issues for which there are not clear cut solutions.
Intellectual Curiosity	To seek out new and ambiguous ideas independently and pose new questions.